

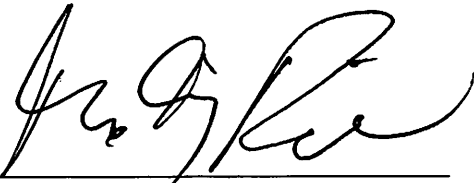
# VIRGINIA FISHERY RESOURCE GRANT PROGRAM

## FRG 2019-13 Final Report

Title: Floating oyster cage aquaculture impacts on submerged aquatic vegetation

*\*supporting VIMS-funded project entitled "Is a precautionary approach to permitting too conservative? Quantifying the impacts of oyster aquaculture on submerged aquatic vegetation"*

Project Investigator: Tim Rapine, Ballard Fish & Oyster Company

A handwritten signature in black ink, appearing to read 'Tim Rapine', written over a horizontal line.

Signature of Principal Investigator

## **Introduction**

This project seeks to enhance environmentally responsible oyster aquaculture by rigorously evaluating the effects of commercial-scale floating oyster aquaculture on the health and distribution of submerged aquatic vegetation (SAV), water quality, sediment characteristics and benthic macrofaunal community structure. Faced with conflicting data, state and federal regulators justifiably take a precautionary approach and generally do not grant leases or permits for conducting oyster aquaculture in or over SAV beds. Conversely, many in the oyster aquaculture industry argue that their practices actually can enhance SAV distribution and abundance, and observational data from some farms in Chesapeake Bay support the assertion that the two can co-exist. The rapid expansion of both SAV and oyster aquaculture in Chesapeake Bay has made the resolution of this issue critical for the industry and resource managers.

The primary impact of the proposed project will be to determine whether the precautionary approach to permitting shellfish aquaculture in areas with SAV is too conservative. Of the types of oyster aquaculture gear used in our region, floating gear is expected to cause the lowest level of direct physical disturbance because it will not lie directly on the bottom and most maintenance and harvest can be performed by boat with care taken to avoid damaging SAV with the boat propeller. By first studying a type of gear that we think has a relatively low likelihood of direct negative impact, we may demonstrate that shellfish aquaculture and SAV are not always incompatible uses of shallow coastal and estuarine environments. If limited or no negative impacts of this gear type, then permitting agencies can move towards developing best management practices that will allow for simultaneous growth of the shellfish industry and expansion of SAV habitats.

A finding of positive impacts of floating oyster aquaculture on SAV habitats and/or other aspects of the surrounding environment along with public outreach and education could also improve public acceptance of shellfish aquaculture in general and floating oyster aquaculture gear in particular. All recent permit requests for floating oyster aquaculture gear have been protested in Virginia, as have most shellfish lease requests.

## **Federal, state, and local government activities and permits**

This project required Ballard Fish & Oyster company to obtain aquaculture gear permits from the Virginia Marine Resources Commission (VMRC) and Nationwide Permit 48 permits for commercial shellfish activities from the Army Corps of Engineers (ACOE). The application for the modification of an existing permit was initiated through the submission of Tidewater Joint Permit Applications to the VMRC and the Norfolk District of the ACOE. The modification included a temporary relocation of one already permitted 270-foot by 154-foot aquaculture float area. Under the current guidelines neither the VMRC nor the Norfolk District would issue these

permits to private industry without confirming with VIMS that SAV was not present at the site. In this case, however, both agencies are aware of the need for this research to support a more informed policy related to floating oyster aquaculture and SAV. VIMS has worked closely with VMRC and Ballard Fish & Oyster company to select locations with SAV that they believe will work for conducting these experiments. Permits for Ballard Fish & Oyster Company were issued in May of 2019.

## **Objectives**

FRG funds were requested to support the commercial activities central to the VIMS study. The objectives of the study are to: 1) quantify the effects (positive and/or negative) of active commercial-scale floating oyster aquaculture on SAV health and distribution, water quality, sediment characteristics and benthic communities within SAV beds, 2) develop approaches to reduce or eliminate any observed negative impacts, and 3) disseminate the results to industry, resource managers, and the public to support environmentally responsible co-use of these critical shallow water estuarine habitats. We proposed to relocate a commercial-scale floating farm to a lease area with a mixed SAV bed to accommodate the study. Our industry objectives will be to support research by providing access to the farm for sampling, keeping accurate records of oyster biomass over the study period, modifying farm layout as needed based on study results (adaptive management), and providing a comprehensive industry perspective on findings.

## **Results**

VIMS staff worked with us to develop volume to count relationships for the range of oyster size classes deployed within the farm and harvested from the farm. Ballard Fish and Oyster Companies Field members began this process with VIMS scientist in June of 2019. Once the farms were in the areas of interest, gear was deployed, and bags stocked with oysters shortly after. From June 10, 2019 -July 22, 2019, 1530 bags were deployed with seed from the 2019-year class. The oysters were grown there until September of 2019, when the crew began to remove oysters for tumbling and grading for size (normal husbandry). At this point the oysters were sized, counted, and restocked in bags at a rate of 175-200 oysters per bag, they were then redeployed back to the farm. The farm would remain in this situation throughout the winter.

In early February, the VIMS crew and Bubba (Farm Manager) meet to discuss the plans for the coming spring season. Between the months of March 2020 and July 2020, the husbandry process and harvest of the market sized oysters took place, all the time making sure there was a sufficient volume of oyster on the farm for the project (communicated with VIMS scientist). Through out the remainder of 2020, VIMS scientist and Ballard Crews continued with the same husbandry schedule as the previous season. During the 2020 season, it was discussed about moving the farm to an area where grass density was heavier than in the current location. The team decided to wait until the spring of 2021 to complete the move and continue with the plan.

Once the farm was move in May 2021, all husbandry remained as planned by the VIMS/Ballard team and the farm was works as normal. The farm began harvesting market oyster in the fall of 2021 but plans for restocking as the spring weather begins to set in.

### **Conclusions/Recommendations**

Ballard Fish and Oyster Company has made significant investments in the floating oyster cage farms in several areas throughout the southern bayside of the eastern shore. Much research has gone into the locations of these farms along with many years of research and development. This R&D has come with more failed farm locations than expected, but mainly based on the ability to keep these farms in water depth to build a sufficient anchoring system. The deeper farms, mainly where there is no grass present, develop challenges where anchoring become, and issue and these farms are very exposed to weather. It requires a different level of maintenance to keep these systems in place.

Shallow farms, not only appear to be easier to maintain and work, but they usually are also more sheltered. There are not many locations on the lower bayside of the eastern shore with these depths, mainly areas with no SAV. Ballard Fish and Oyster Company maintains high production standards while always keeping the goals of being good conservationists as well. It is important for our farms to be able to coexist with the SAV and hope this research can find results beneficial for both Aquaculture and SAV.

Ballard Fish and Oyster Company welcomes the continued research of the Floating oyster cage farms and SAV with the hopes of continuing further gains of understanding these interactions.

### **Appendix**

Evaluating Interactions Between Floating Oyster Aquaculture Structure and Submerged Grasses, VIMS Submitted to VMRC April 12, 2019.

VMRC #18-1518 (modification)